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RF Exposure Evaluation Report

Product: True Wireless Stereo Earphone

Trade mark : N/A

Model/Type reference : BTW-V2, SiFi, BTW-V1, BTW-105Q, BTW-106Q, BTW-107Q

Serial Number : N/A

Report Number : EED32L00168902 FCC ID : 2ADQABTW-V2

Date of Issue : Aug. 08, 2019

Test Standards : 47 CFR Part 1.1307(2015)

47 CFR Part 1.1310(2015)

KDB447498D01v06

Test result : PASS

Prepared for:

ShenZhen iFree Electronic Technology Co., Ltd. 7F, A9 Building, Tianrui Industiral Zone, No.35 Fuyuan 1st, Fuyong, Baoan, Shenzhen, China

Prepared by:

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Date: Aug. 08, 2019 Check No:3096312708









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2 Version

Version No.	Date		Description	
00	Aug. 08, 2019		Original	
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4 General Information

4.1 Client Information

Applicant:	ShenZhen iFree Electronic Technology Co., Ltd.				
Address of Applicant:	7F, A9 Building, Tianrui Industiral Zone, No.35 Fuyuan 1st, Fuyong, Baoan, Shenzhen, China				
Manufacturer:	ShenZhen iFree Electronic Technology Co., Ltd.				
Address of Manufacturer:	7F, A9 Building, Tianrui Industiral Zone, No.35 Fuyuan 1st, Fuyong, Baoan, Shenzhen, China				
Factory:	ShenZhen iFree Electronic Technology Co., Ltd.				
Address of Factory:	7F, A9 Building, Tianrui Industiral Zone, No.35 Fuyuan 1st, Fuyong, Baoan, Shenzhen, China				

4.2 General Description of EUT

Product Name: True Wireless Stereo Earphone					
Model No:	BTW-V2, SiFi, BTW-V1, BTW-105Q, BTW-106Q, BTW-107Q				
Test Model No:	BTW-V2				
Trade Mark:	N/A				
EUT Supports Radios application:	BT 5.0 Single mode, 2402-2480MHz;				

4.3 Product Specification subjective to this standard

Frequency Range:	2402-2480MHz				
Modulation Type:	GFSK, π/4DQPSK, 8DPSK	13			
Number of Channels:	79	(%)			
Test Power Grade:	N/A(manufacturer declare)	(
Test Software of EUT:	N/A(manufacturer declare)				
Antenna Type:	internal antenna				
Antenna Gain:	4.97dBi				
Power Supply:	Battery 3.7V				
Max Conducted Peak	4.753dBm				
Output Power:	The Max Conducted Peak Output Power: data refer to the report EED32L00168901				
Sample Received Date:	Jun, 27, 2019	(5)			
Sample tested Date:	Jun, 27, 2019 to Jul. 29, 2019	6			

The tested sample(s) and the sample information are provided by the client.

Model No: BTW-V2, SiFi, BTW-V1, BTW-105Q, BTW-106Q, BTW-107Q

Only the model BTW-V2 was tested, The add model and original model, electrical circuit design, layout, components used and internal wiring are identical, only model name is different.

For the left earphone and right earphone ,electrical circuit design ,PCB Layout is same ,only the cars

is different.



















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4.4 Test Location

All tests were performed at:

Centre Testing International Group Co., Ltd

Building C, Hongwei Industrial Park Block 70, Bao'an District, Shenzhen, China

Telephone: +86 (0) 755 33683668 Fax:+86 (0) 755 33683385

No tests were sub-contracted. FCC Designation No.: CN1164

4.5 Deviation from Standards

None.

4.6 Abnormalities from Standard Conditions

None.

4.7 Other Information Requested by the Customer

None.











































































5 RF Exposure Evaluation

5.1 RF Exposure Compliance Requirement

5.1.1 Limits

According to FCC Part1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in part1.1307(b)

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)	
(A) Lim	its for Occupational	/Controlled Exposure	es		
0.3–3.0	614	1.63	*(100)	6	
3.0–30	1842/f	4.89/f	*(900/f2)	6	
30–300	61.4	0.163	1.0	6	
300–1500			f/300	6	
1500–100,000			5	6	
(B) Limits 1	or General Populati	on/Uncontrolled Exp	osure		
0.3–1.34	614	1.63	*(100)	30	
1.34–30	824/f	2.19/f	*(180/f ²)	30	
30–300	27.5	0.073	0.2	30	
300-1500			f/1500	30	
1500-100,000			1.0	30	

A rough estimation of the expected exposure in power flux density on a given point can be made with the following equation:

$$S = \frac{P \times G}{4 \times \pi \times R^2}$$

Where:

S = power density

P = power input to the antenna

G = numeric gain of the antenna in the direction of interest relative to an isotropic radiator

R= distance to the centre of radiation of the antenna

EIRP = P*G

The antenna of the product, under normal use condition is at least 20 cm away from the body of the user. Warning statement to the user for keeping at least 20cm separation distance and the prohibition of operating to a person has been printed on the user's manual. Therefore, the S of the device is calculated with R=20cm, and if it is below the limit S, then we can conclude the device complies with the rules.

5.1.2 Test Procedure

Software provided by client enabled the EUT to transmit data at lowest, middle and highest channel individually.



















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5.1.3 EUT RF Exposure Evaluation

Antenna Gain: 4.97dBi

Output Power Into Antenna & RF Exposure Evaluation Distance:

Channel	Frequency (MHz)	Max Conducted Peak Output Power(dBm)	Gain (dBi)	EIRP* (dBm)	EIRP (mW)	R (cm)	S (mW/cm²)	Limit (mW/cm²)	Result
Highest	2480	4.753	4.97	9.723	9.38	20	0.0093	1.0	Pass





























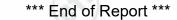




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PHOTOGRAPHS OF EUT Constructional Details

Refer to Report No. EED32I00168901 for EUT external and internal photos.



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